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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/891,309	06/27/2001	Peter D'Antonio	D'ANTONIO-15	1645

7590 09/26/2002

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EXAMINER

MCCLOUD, RENATA D

ART UNIT	PAPER NUMBER
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2837

DATE MAILED: 09/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.	D'ANTONIO ET AL.	
09/891,309		
Examiner	Art Unit	
Renata McCloud	2837	

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 06/27/2001.

2a) This action is FINAL.      2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-24 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-24 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 06/27/2001 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)  The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) Notice of References Cited (PTO-892)      4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)      5) Notice of Informal Patent Application (PTO-152)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.

6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because the drawings show Figure 4a, but the specification describes Figure 4. The applicant should change Figure 4a to Figure 4. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. Change Figure 4a to Figure 4. The objection to the drawings will not be held in abeyance.
  
2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show:
  - a. Item 51 in figures 11-13 as described in the specification (Page 9, Line 7).
  - b. “Line 7-7” in either figures 5 or 7 as described in the specification (Page 6, Lines 6-7).
  - c. “Line 13-13” in either figures 12 or 13 as described in the specification (Page 6, Lines 18-19).

Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Specification***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The title needs to include that there is a method. The following title is suggested: Sound Diffuser with Low Frequency Sound Absorption and Method.
  
4. The disclosure is objected to because of the following informalities:
  - a. The Trademarks “ DIGIWAVES”, “FLUTTERFREE ”, “SKYLINE ”, and “QRD” on pages 1, 2, and 3 respectively, are not described within the specification
  - b. Page 7, lines 20-21 refer to item 13 as both the well and the absorptive cover. The absorptive cover is item 23.
  - c. Page 8, lines 17-18 disclose U.S. Patent 5,401,921 as having an issue date of September 5, 2000. Either the issue date or the patent number is incorrect.
  - d. Page 9, line 9 refers to item ”59” as rectangular openings and then refers to ”59” as “the holes” in lines 10-11. ”59” should be referred to as one or the other (rectangular openings or holes).

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. The term "relatively" in claim 9 is an undefined term, which renders the claim indefinite.

The term "relatively" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

6. The term "significant" in claim 15 is a relative term, which renders the claim indefinite.

The term "significant" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

7. Claims 14 and 22 recite the limitation "the group". There is insufficient antecedent basis for this limitation in these claims.

8. Claim 16 recites the limitation "the holes". There is insufficient antecedent basis for this limitation in the claim.

9. Claims 17 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The unit of measurement for the diameter of 0.1 is not defined and should read "0.1 millimeter to 1 millimeter".
10. Claim 20 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It has the following informalities:

- a. The phrase "such as" in part 'b' renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).
- b. An equation is missing for a standard acoustic formulation in part 'b'.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-5, 7, 15, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by D'Antonio et al (U.S. Patent 4,964,486).

D'Antonio et al teach the claimed invention as follows: referring to claim 1, a sound diffuser with low frequency sound absorption having a front surface and means for absorbing sound waves below a desired cut-off frequency (e.g. Figure 18, Item 100);<sup>15</sup> referring to claim 2, a plurality of divided or non-divided parallel wells (e.g. Figure 7, Items 51, 53); referring to claim 3, the front surface having a geometrical or irregular shaped pattern (e.g. Figure 7); referring to claim 4, the shapes separated by slots or holes (e.g. Figure 2); referring claim 5, some means between the slots or holes (e.g. Column 5, Lines 5-21); referring claim 7, the incorporated means having a plurality of open slots (e.g. Figure 3, Items 25, 27); referring claim 15, the slots providing low frequency absorption (e.g. Column 5, Lines 5-10); and referring to claim 16 the slots narrow enough to provide low frequency absorption (e.g. Column 4, Lines 66-67).

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 6 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Antonio et al as applied to claim 1 above, in view of McGrath (U.S. Patent 6,015,026).

D'Antonio et al teach the invention of claim 1. However it is unclear whether D'Antonio et al discloses the following: referring to claim 6, the front surface comprised of a compound curved shaped, and referring to claim 19, a crossover frequency below

which sound is absorbed and above which diffusion takes place. McGrath teaches these as follows: referring to claim 6 (e.g. Figure 1, Item 12), and referring to claim 19 (e.g. Figure 24). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the D'Antonio et al's diffuser to include the teachings of McGrath. The advantage of this would be improved absorption and diffusion.

10. Claims 8, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over

D'Antonio et al as applied to claim 1 above, in view of Fries (U.S. Patent 5,422,446).

D'Antonio et al teach the invention of claim 1. However it is unclear whether D'Antonio et al teach the following: referring to claim 8, the incorporated means having a plurality of holes; referring to claim 13, an absorptive material over the rear of the body; and referring to claim 14, the absorptive material made of a porous material. Fries teaches these as follows: referring to claim 8 (e.g. Figure 1, Item 9); referring to claim 13 (e.g. Figure 2, Item 7); and referring to claim 14 (e.g. Column 3, Line 66-68). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the D'Antonio et al's diffuser to include the teachings of Fries as previously described. The advantage of this would be to improve the division of both diffused sound and absorbed sound.

11. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over D'Antonio et

al in view of Fries as applied to claim 8 above, and further in view of Huszty et al (U.S. Patent

3,862,366). D'Antonio et al in view of Fries teaches the invention of claim 8. However it is

unclear whether they teach claims 9 and 10. Huszty et al, teach claims 9 and 10 as follows:

referring to claim 9, a set of large holes (e.g. Figure 8, Item13) and a set of small holes (e.g. Figure 8, Item 12); referring to claim 10, the sets of holes arranged in rows (e.g. Figure 8, Items 12 and 13).

Referring to claim 11, Fries teaches the rows of holes located within a well of a diffusive surface (e.g. Column 1, Lines 48-53); and referring to claim 12, Fries teaches the holes located across a plurality of wells (e.g. Column 1, Line 64- Column 2, Line 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of D'Antonio et al in view of Fries to include the teachings of Huszty et al. The advantage of this would be an improvement of sound absorption and diffusion.

12. Claims 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patrick (U.S. Patent 5,892,187) in view of D'Antonio et al, and further in view of McGrath.

Referring to claim 20, Patrick teaches making an acoustical device by calculating the number of perforations using an equation (e.g. Column 5, Lines 28-57). However it is unclear whether Patrick teaches the remainder of claim 20. D'Antonio et al teach claim 20 as follows: forming perforations of desired dimensions though a front surface (e.g. Column 2, Lines 21-25). However, it is unclear whether D'Antonio et al teach the remainder of the claim. McGrath teaches the remainder of claim 20 as follows: designing a diffusive surface shape to create diffusion above crossover frequency (e.g. Column 9, Lines 56-62), and installing the device (e.g. Column 10, Lines 64-67). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Patrick's invention to include the teachings of both

D'Antonio et al and McGrath. The advantage of this would be an improved method for the diffusion of absorbed sound and diffused sound.

Referring to claim 21, D'Antonio et al teach a plurality of parallel wells (e.g. Figure 7, Items 51, 53).

Referring to claim 22, D'Antonio et al teach the front surface having a two-dimensional pattern (e.g. Figure 7).

Referring to claim 23, D'Antonio et al teach the shapes separated by slots or holes (e.g. Figure 2).

Referring to claim 24, McGrath teaches the front surface comprised of a compound shape (e.g. Figure 1, Item 12).

#### ***Allowable Subject Matter***

13. Claims 17 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The reason for this is that the prior art fails to disclose a sound diffuser with low frequency sound absorption having a plurality of open slots and holes that are narrow enough and have a width of 0.1 millimeter to 1 millimeter.

#### ***Conclusion***

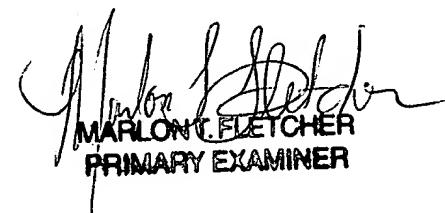
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renata McCloud whose telephone number is (703) 308-1763. The examiner can normally be reached on Mon.-Thurs and every other Fri. from 8 am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi can be reached on (703) 308-3370. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Renata McCloud  
Examiner  
Art Unit 2837

RDM  
September 24, 2002



MARLON T. FLETCHER  
PRIMARY EXAMINER